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Retrospective analysis of polyps detected in colonoscopy and investigation of the relationship with anemia

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ABSTRACT

Aims: Patients with colonic polyps are generally asymptomatic. On the other hand, colon polyps are considered as colorectal cancer progenitors. In this study, we aimed to present the retrospective analysis of colon polyps detected in a gastroenterology unit within one year and the relationship between polyp features and anemia.

Methods: Patients with colon polyps who applied to our center between January 2015- January 2016 and underwent colonoscopy were included in the study. Polyps were grouped and compared as 1,2,3 and ≥4 according to their number; as hyperplastic, tubular, tubulovillous and villous according to their histopathological type; as ≤6 mm, 7-10 mm and ≥11 mm according to their size; as proximal, distal and proximal+distal according to their location.

Results: A total of 350 patients were recruited for the study, The median age of the study group was 60 years (54-65 years), of which 180 (51.4%) were male. The mean hemoglobin value was 12.82±1.90 g/dl. More than half of the patients (n=166, 52.5%) had single polyp. The most common type of polyp was tubular polyp (n=203, 55%). The majority of the polyps (63%) were smaller than 6 mm in size and the vast majority (47.2%) were located distally. When the polyp size and polyp types were compared, it was found that the incidence of tubulovillous pathology increased as the polyp size increased ($p<0.001$ for all comprasions). A positive, linear significant correlation was found between age and the number of polyps ($r=0.209$; $p<0.001$). There was a statistically significant difference between hemoglobin value according to polyp sizes ($p<0.001$).

Conclusion: We demonstrated that the number of polyps increased with age, and the incidence of tubulovillous pathology and the depth of anemia increased as the size of the polyp increased.

Keywords: Colon polyp, polypectomy, hemoglobin, colonoscopy

INTRODUCTION

Colorectal polyps are lesions which develop secondary to the protrusion of the colorectal mucosal tissue into the lumen.[1] In clinical practice colon polyps don't cause any symptoms unless they reach large sizes and have an asymptomatic course.[2] However, although rare, depending on size, distributional and histopathological features, they can be associated with symptoms such as bleeding, intestinal obstruction and abdominal pain.[3]

Although colon polyps are generally asymptomatic, they can be precursor lesions for the development of colorectal cancer thus, several guidelines highlight the importance of colonoscopy for colorectal cancer screening.[4,5] Offered data showed that early detection and removal of colon polyps can significantly reduce the rate of colorectal cancer and related deaths.[6] In order to ensure successful management of colon polyps' evaluation of the polyp characteristics is crucial.[4]

In the presented study, the aim is to analyze the colorectal polyps features detected by the colonoscopic examination in our gastroenterology unit retrospectively and evaluate the relationship between the polyp features and anemia.

METHODS

The presented study was designed as a retrospective study conducted in gastroenterology department of Gazi University Faculty of Medicine. Approval for the study was obtained from the Ethical Committe of Gazi University Faculty of Medicine (Date: 08.02.2016, Decision No: 82). All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki.

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All eligible consecutive patients aged between 45 and 70 years who applied to our center between January 2015- January 2016 and underwent colonoscopy were retrospectively analyzed. Patients with polyps detected during colonoscopy procedure and underwent polypectomy and those with polypectomy material evaluated by the pathology department were enrolled for the study. Exclusion criteria encompassed the following: active malignancy, hematological diseases, inflammatory bowel disease and history of bowel surgery. Patients with inadequate colon preparation were also excluded since suboptimal colonoscopic examination may affect the polyp detection rate. The boston bowel preparation scale was used in the assessment of the bowel preparation, and cases with segments score 3 were accepted as adequate bowel preparation.

Patients demographic data, hemoglobin levels and histopathological findings, sizes, numbers, and locations of the detected polyps were obtained from hospital records. Polyps were divided in sub-groups in order to compare on the basis of their number (as 1,2,3, and ≥4), histopathological type (as hyperplastic, tubular, villous and tubulovillous), size (as ≤ 6 mm, 7-10 mm, and ≥11 mm) and localization (as proximal, distal and proximal+distal). Polyps located in the splenic flexure, descending colon, sigmoid colon, and rectum were classified as distal.

Statistical Analysis

Statistical analysis was done by using the SPSS version 17 for Windows (SPSS Inc., Chicago, IL, USA). The normality of the distribution of continuous variables was assessed via the Kolmogorov-Smirnov test. Age was distributed non-normally so was given as median (interquartile range) and hemoglobin value was distributed normally and was given as mean±standard deviation. Categorical variables were given as frequency and percentages. The comparisons were done via the Chi-Square test for categorical variables, via the Oneway ANOVA test for hemoglobin value. Spearman correlation analyses were done to determine the relationship between age and the number of polyps and hemoglobin value. A p-value<0.05 was accepted as significant.

RESULTS

Table 1 shows the characteristics of the patients. Three hundred and fifty patients were included in the study. The median age of the study group was 60 (54-65) years. More than fifty percent of the study group was male (n=180, 51.4 %). The mean hemoglobin value was 12.82±1.90 g/dl. A single polyp was detected in 166 (52.5%) patients. Tubular adenomatous polyp (n=203, 55%) was the most common polyp type, in addition most of the polyps (63%) were smaller than 6 mm in size. The polyps were located mostly distally (47.2%).

Table 1. Baseline characteristics of patients and polyps' characteristics

	Whole study group (n=350)
Age, years, median (interquartile range)	60 (54-65)
Gender, male, n (%)	180 (51.4%)
Hemoglobin (g/dL), mean±SD	12.82±1.90
Number of polyps, n (%)	
1	166 (52.5%)
2	94 (29.8%)
3	35 (11%)
≥4	21 (6.7%)
Polyp type, n (%)	
Hyperplastic	101 (27.4%)
Tubular	203 (55%)
Tubulovillous	50 (13.5%)
Villous	15 (4.1%)
Polyp size, , n (%)	
≤6 mm	230 (63%)
7-10 mm	102 (28%)
≥11 mm	33 (9%)
Polyp localization, n (%)	
Proximal	95 (30%)
Distal	149 (47.2%)
Proximal+distal	72 (22.8%)

SD: Standard deviation

The comparisons of the relationship between the pathological sub-groups and polyp size revealed no statistically significant difference, except for tubulovilllous pathology. In Table 2 the comparisons between tubulovilllous pathology and polyp size were given. A statistically significant relationship between polyp size and the presence of tubulovillous pathology was found (p=0.004), as polyp size increased, the incidence of tubulovillous pathology also increased (p<0.001 for all comparisons).

Table 2. Comprasions of polyp size in tubulovillous pathology subgroup

	Polyp size			Total	p (total)	p (1-2)	p (1-3)	p (2-3)
	≤6 mm, n (%) (1)	7-10 mm, n (%) (2)	≥ 11 mm, n (%) (3)					
Tubulovillous pathology					0.004	<0.001	<0.001	<0.001
No	181 (93.30)	71 (78.90)	15 (45.50)	267 (84.20)				
Yes	13 (6.70)	19 (21.10)	18 (54.50)	50 (15.80)				
Total	194	90	33	317				

Table 3 summarizes the correlation analyses between age and the number of polyps, and a significant positive linear correlation was found between age and the number of polyps (r=0.209; p<0.001). Table 4 provides the comparisons of the relationship between hemoglobin value and polyp size. There was a statistically significant difference in hemoglobin value according to polyp size (p<0.001), as polyp size increased, statistically significant lower hemoglobin values were found (p<0.05 for all comparisons).

Table 3. Correlation of age and number of polyps and hemoglobin value

	Number of polyps	Hemoglobin value
Age, years	r=0.209 (p<0.001)	r=-0.006 (p=0.922)

Table 4. Comprasions of polyp size and hemoglobin value

Polyp size	n	Hemoglobin mean±standard deviation	p (total)	p (1-2)	p (1-3)	p (2-3)
≤6 mm (1)	194	13.33±1.51				
7-10 mm (2)	90	12.79±1.81	<0.001	0.025	<0.001	<0.001
≥11 mm (3)	33	9.94±1.63				

DISCUSSION

In this retrospective study, we found that tubular adenomatous polyp was the most detected histopathological subtype, most of the polyps were less than 6mm in size and located distally. In addition, a relationship was found between the presence of tubulovillous pathology and polyp size. Moreover, a positive linear significant correlation was demonstrated between the number of polyps and age. Notably, we have demonstrated that an increase in the polyp size is associated with lower hemoglobin values.

Colorectal cancers are the third most common cancer type in the world and take the second place in cancer-related deaths worldwide.[7] The high mortality rates of colorectal cancer highlight the importance of early diagnosis.8-10 The majority of guidelines recommend screening with a colonoscopic examination after the age of 45 for the early diagnosis of colorectal cancer.[11,12] Since adenomatous polyps are associated with the risk of transformation into malignancy, it is recommended to remove colorectal polyps detected during screening.[7,13,14] According to the literature, the majority of colon polyps are located on the left side of the colon and smaller than 6 mm.[15] Our findings are consistent with the literature as we also found that the distal colon was the most common localization for the polyps and the majority were smaller than 6 mm. This finding draws attention to the fact that smaller polyps are difficult to detect during colonoscopy compared to larger polyps and may be easily missed. In addition, inadequate bowel preparation makes it more difficult to detect these types of polyps. Therefore, the clinician should perform the examination carefully, being aware that the majority of polyps are smaller than 6mm, and pay attention to colon cleansing.

Another important finding of this study is that increased frequency of villous pathology was associated with increased polyp size. Tubulovillous adenomatous polyp, which are included under the title of adenomatous polyp, have a higher malignancy potential than tubular polyps.[16,17] Our findings highlight the importance of performing optimal resection of large-sized polyps, close follow-up of the pathology result, and additional resection if needed, since their higher malignant potential.

Several studies demonstrated that the incidence and number of polyps increase with age.[14,18] We also have demonstrated a positive linear correlation between age and the number of polyps. Considering their malignancy potential, colonoscopic screening of the geriatric population is becoming more important and prioritized and many guidelines emphasize the importance of screening this population, since the incidence of colorectal cancer increases with age.

Notably, we found statistically significant lower hemoglobin values as the polyp size increased. Although polyps are generally considered asymptomatic, it has been shown that, they can be associated with iron deficiency anemia.[19-21] However, based on these findings alone, it cannot be concluded that polyps may be associated with anemia. Thus, further prospective studies are needed to support this theory.

The major limitation of the current study was its retrospective design. Due to the nature of the study, the patients were not followed up. In addition, it was a single-centered study and had a relatively small sample size.

CONCLUSION

We demonstrated that the number of polyps detected during colonoscopy increased with age. In addition, we found that the increase in the size of the polyp is associated with the frequency of tubulovillous pathological subgroup and the depth of anemia. Diagnosis and removal of colon polyps has a significant impact on reducing the incidence and mortality of colorectal cancer, and these findings highlight the importance of colonoscopic screening, especially in older ages and patients with anemia.

ETHICAL DECLARATIONS

Ethics Committee Approval

The study was carried out with the permission of Ethical Committe of Gazi University Faculty of Medicine (Date: 08.02.2016, Decision No: 82).

Informed Consent
Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process
Externally peer-reviewed.

Conflict of Interest Statement
The authors have no conflicts of interest to declare.

Financial Disclosure
The authors declared that this study has received no financial support.

Author Contributions
All of the authors declare that they have all participated in the design, execution, and analysis of the paper and that they have approved the final version.

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